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Starting in the late 1950s, John Cage composed a number of works which are "indeterminate with respect to [their] performance."[1] The most well-known works of this type date from the late 1950s and 1960s and include *Variations I*, *Fontana Mix*, *Cartridge Music*, *Variations II*, and *Variations III*.[2] Their scores consist of all or some of the following materials: transparent sheets with black dots, circles or lines of various sorts, and opaque sheets with dots or lines—the latter straight or circular. The instructions for the pieces typically direct the performer(s) to randomly overlay the sheets, often the transparent sheets onto the opaque ones. The resulting configurations are then read as indications of actions to be performed.[3] Each piece differs with respect to the precise way in which the

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[1]Cage, John. "Composition as Process. II. Indeterminacy," *Silence* (Cambridge, MA: MIT University Press, 1966 [1961]), 35.

[2]For present purposes, I consider only those "indeterminate works" requiring the action of a performer in the creation of a notation to be "read." By this definition I exclude works like the *Solo for Piano*, part of whose score consists of notations that can be "read" directly by a performer.

[3]The process of "reading" may include measurement; Cage does not, however, specify the relation between the measurements and the sound to be produced.

resulting configurations are to function as musical notation—that is, as instructions for the performer to produce sounds.

The indeterminacy of such works operates in a couple of ways. First, the composer no longer determines what in traditional notation is a more or less precise relation between notational symbol and sound: the composer "undetermines" the traditional process by which a performer reads a notation and produces sound successions determined by a composer. Instead the composer "determines" a set of rules by which a performer may produce notational symbols which regulate sound production. Second, since the notations of the score do not specify particular sounds, the concept of the piece must be reformulated in order to compensate for the fact that, for instance, *Fontana Mix* cannot—or perhaps should not—be correlated with any particular sound sequence.[4] With respect to the relation of traditional scores to the sounds they specify, the relation between the scores of indeterminate works and the sounds they generate is indeterminate. That is, an indeterminate score stands in a one-to-infinity relation with sounds that "represent" the work.[5]

It is just this "one-to-infinity" relation that has stymied any attempt by scholars to deal with the "sounds" of pieces like *Fontana Mix* and *Variations I* —unless authors confuse a performance with a piece, something that has happened often enough with *Fontana Mix*, for instance.[6]

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[4]Of course it is surely possible that individual listeners will come to associate a particular performance with "the piece." On the one hand, the possibility of such associations argues against recordings if the principle of "indeterminacy" is strictly to be obtained. On the other, the fact of recordings suggests that the "strict" principle is not specifically at issue. The practice of recording such indeterminate works may be understood as a reflection of the value our society places on performers—a valuation at work in the indeterminate works as well.

[5]In this era of precise electronic measurement of pitch and duration, it could be argued that even traditional notation stands in a "one-to-infinity" relation with the sounds it generates in performance. From this perspective, the distinction between traditionally notated works and those indeterminate works at issue here is a relative matter: traditional notation specifies more than does indeterminate notation.

[6]Cage made an electronic realization of *Fontana Mix* in the Studio di Fonologia of Milan which was finished February 1959. This performance is the most well-known and is sometimes considered to be "the piece." For instance, Robert Morgan writes in his *Twentieth-Century Music* (New York: Norton, 1991): "Among many others who worked at the Milan studio during these early years was John Cage, whose several works produced there include *Fontana Mix*." (p. 467) And later: "one solution [Cage] offered [to the problem of the "fixed" character of tape mix] was to combine performances of his electronic compositions with those

Scholars focusing on the performance of music for which no contemporaneous recordings exist have had necessarily to observe the relatively indeterminate relation between notation and sound. Notation does not—and probably cannot—precisely indicate all aspects of a composer's sound ideal. If we understand notation as functioning intersubjectively within a community, then any particular symbol need only provide enough information to trigger a fuller understanding of sound generated by the symbol for the performer. This fuller understanding is grounded in stylistic attributes that are particular to a specific community. This understanding of notation and its relation to the sound ideals of a musical community informs a fruitful approach to Cage's indeterminate works.

A sound ideal or style emerged in the late 1950s through the musical practices of Cage and several of his associates—most notably, David Tudor, Christian Wolff, Morton Feldman, and Earle Brown—in the 1950s. That style forms a tacit backdrop for the composition and performance of music within this community. Therefore, in the particular case of the indeterminate works of Cage, the notational configurations the performer produces and reads are informed by the tacit understanding of stylistic characteristics of the community.

Several observations compel this approach. First, the sounding features of various performances of Cage's works from the 50s and 60s—both determinate and indeterminate—project noticeable similarities. Second, if performers are given what seems a great deal of latitude in the indeterminate works, then we might well expect a greater variety amongst particular performances. And third, if performers are indeed given such latitude, then what are we to make of Cage's aesthetic pronouncements? For instance, he writes:

> This giving of freedom to the individual performer began to interest me more and more. And given to a musician like David Tudor, of course, it provided results that were extraordinarily beautiful. When this freedom is given to people who are not disciplined and who do not start—as I've said in so many of my writings—from zero (by zero I mean the absence of likes and dislikes), who are not, in other words,

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of acoustic pieces: playing his *Fontana Mix* simultaneously with his *Aria* for solo voice . . . " (p. 473) Peter Yates writes in his *Twentieth-Century Music* (New York: Random House, 1967)" "Cage's *Concert for Piano and Orchestra* . . . [may include] the taped composition, *Fontana Mix* . . ." (p. 234) And finally, *Grove 6* lists the piece as: "*Fontana Mix*, tape, 1958." (vol. 3, p. 602)

> changed individuals, but who remain people with particular likes and dislikes, then, of course, the giving of freedom is of no interest whatsoever.[7]

If results can be more or less beautiful and if criteria exist by which one can determine if a perfomer has "likes and dislikes," then some aesthetic standards are being employed, and those standards must necessarily reflect the boundaries of a musical style.

Let me now articulate an approach to Cage's indeterminate works that allows us to account for its sounding characteristics—an approach that seeks to find a performance-practice basis. This approach requires first, the notion of an overriding rhetoric of freedom surrounding the compositional aesthetic during the 1950s and 60s, and second, the location of authority for a musical practice within a community of performers, composers, and listeners, and third, a definition of style characteristics within a group of pieces.

If the idea of the existence of a musical style within a community of musicians is to have force, it will be necessary to explain why individuals within a community chose to abandon traditional modes of notational practice. If a sound ideal operates within this community, individuals within the community should be able to communicate that ideal in relatively determinate notational forms. In the case of Cage in the 1950s and 60s and the community surrounding him, we may point to a more comprehensive cultural and aesthetic concern for "freedom." This concern arises in various aspects of musical production during this time (e.g. in Stockhausen, Boulez, Carter, and Krenek).[8]

If we are to define an authority for stylistic propriety, it must be sought within a community of musicians. Cage's aesthetic musings (see the quotation above) are appropriate here. As these musings suggest and John Holzaepfel's recent work allows us to observe, Tudor as perfomer was as instru-

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[7]Richard Kostelanetz, *Conversing with Cage* (New York: Limelight Editions, 1988), 67.

[8]See for instance Boulez's Third Piano Sonata and *Pli selon pli*; Stockhausen's *Zeitmasse* and *Zyklus*; Carter's "Double Concerto" for its programmatic reference to "Anarch"; and Krenek's interest in the indeterminacy of total serialism in his "The Extents and Limits of Serial Technique," in *Problems of Modern Music*, ed. Paul Henry Lang (New York: Norton, 1961).

mental to defining a style as any of the composers involved.[9] The defining *characteristics of this style must be sought within the broader community* contributing to it: the community becomes, then, the aesthetic arbiter. And the style, in this case, can be adequately sought in its recorded performances.

At this point, we need to turn to a definition of this style.[10] Listed below are a number of pieces with performance/recording information. Reliance on recorded performances presents methodological obstacles, three of which require comment. First is the problem of determining whether the defining community would count the performance as "good." For all of the performances considered there is reason to believe that each would be aesthetically acceptable. Second is the problem of performances dating from different times. Such temporal disparity does raise questions about whether more recent performances project stylistic features unlike those of, say, the 1960s. The more recent performances considered here do not project, to my ear, any such stylistic differences—such consistency is attributable to the strength of the defining aesthetic community. And third, reliance on recorded performances creates an added problem in the print medium of journals. Description in words of sounding characteristics will be most effective if readers have the sounds of the performances "in their ears." Readers are encouraged to listen to the recordings considered here or others of the same pieces.

My discussion of performance features focuses first on general aspects and then turns to a description of gestural types. In the following pieces the number to the right indicates the length of the "realization." Notice in particular the discrepancies of length in regard to the same "work."

Variations I (1958)

1975: Zsigmond Szathmary, organ[11]	**4'57"**
1967: Kurt Zacher, organ[12]	**10'10"**

[9]John Holzaepfel, "The Pianism of David Tudor and Its Role in the Development of American Experimental Music, 1950-59," Ph. D. dissertation, City University of New York, 1993.

[10]Here I have imposed a few limitations. I consider only works for which I was able to utilize at least two recordings and in which the score itself requires an action by the performer deriving from notational symbols which can be "read." By excluding "graphic" notation from my concern, I do not mean to dissociate all such works from the category "indeterminate."

[11]Opus Musicum 116/118 (originally released on Da Camera Schallplatenedition).

1991: Frances-Marie Uitti, cello[13]	**4'38"**

Fontana Mix (1958)

1958: John Cage, tape "collage"[14]	**11'30"**
1965: Max Neuhaus, amplified percussion[15]	**9'00"**

Cartridge Music (1960)

1962: John Cage and David Tudor[16]	**20'00"**
1988: David Tudor, Takehisa Kosugi, Michael Pugliese[17]	**17'50"**

Variations II (1961)

1970(?): David Tudor, amplified piano[18]	**27'00"**
1991: Frances-Marie Uitti, cello[19]	**2'41"**

Variations III (1962-3)

1970: San Francisco New Music Ensemble, voices and percussion with solos for horn, trumpet, trombone, tuba, violin, and viola	**7'45"**
1991: Frances-Marie Uitti, cello[20]	**4'32"**

Concerning durational aspects of this music, we may note that events do not, generally, mark off regular time units. The music articulates spans whose durational extensions are put into comparison in more "open" or "free" terms as longer or shorter. That is, since the music does not "measure out"

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[12]Wergo 60033 (also on Heliodor 2549 009).

[13]Etcetera KTC 2016.

[14]Turnabout 34046.

[15]Columbia MS 7139.

[16]Time Records 58009.

[17]Mode 24.

[18]Columbia MS 7051. I am indebted to John Holzaepfel for the date of this performance.

[19]Etcetera KTC 2016.

[20]Etcetera KTC 2016.

time in regular units, durational spans are thrown into comparisons of durational quality.

Phrase and formal aspects of the music are closely linked to temporal texture. Phrases occur as parts of the music which "hang together" through the consistency of a gestural or timbral type. Alternately, silence or some distinctive articulating event will provide demarcation. For present purposes, I'll consider form from two perspectives: the types of beginnings and endings projected by individual performances and formal shape as a consequence of variations of temporal textures.

The following three types of beginnings may be found:

In Progress (e.g. we turn on the radio to sounds already in progress)
Ex., the beginning of Cage's *Fontana Mix*

Bang (usually a loud or accentuated event that grabs the attention)
Exs., opening of Tudor's *Variation II*, and of Uitti's
Variation I (her's is of shorter realization)

Emerging (usually a soft, easing into sound)
Ex., Neuhaus's *Fontana Mix*

And the following two types of closes:

Stop
Abrupt Cage and Tudor, *Cartridge Music*
Dissolving Tudor et al., *Cartridge Music*

Closing gesture
San Francisco, *Variations III*

Changes in temporal texture contribute to the overall design of a performance. The timetable of David Tudor's amplified piano version of *Variations II*, below, indicates such changes in the right-hand column. The changing pace of events in the performance traces out curves of relative activity and non-activity.

Timetable of Events in Tudor's Performance of *Variations II*

0:00	Intermittent gong attacks with crackles and screech	**slow rate of events**
3:20	Crackles grow louder; taps insistent	

4:40	Scrapes added	
4:55	Low rumble; beating; gong	
6:05	Subito piano, rumbles	**less**
6:30	Gong and silence	
7:05	Low gongs, scrapes, hums, screech	**gradually active**
	Noise hits, high/low hums	
10:00	Hoot	**less**
10:26	Noise hits	**active**
11:05	Silence	
12:05	Scrapes, screech, sword rattling	
13:50	Scrapes	**high activity**
14:10	Scrapes	**gradually less**
14:40	Screech added	**active**
14:58	"	**gradually less**
15:10	"	**active**
16:00	"	**high activity**
16:20	"	**less**
16:25	"	**active, gradually less**
17:19	Scrapes	**less**
17:26	"	**active**
18:00	White noise	**high activity**
18:34	Quiet squeaks	**less**
19:07	Screech, rattling swords	**active**
20:00	Short silence	
20:20	Rumbles, low hoot	
21:33	Hum, screech, rattling, crackling, low hoot	**active**
22:18	Scrapes, screech, crackles	**less**
22:48	Silence	
22:52	Screech, scrapes	
23:43	Silence	
24:01	Gong, scrapes	
24:20	Added sword rattling, crackles	**active**
25:41	Added low rumble	
26:08	Slow airplane engine	**less**
26:34	Scrapes	**active**

The middle column of the timetable indicates musical ideas—what I'll call gestural types—that occur not only in this performance of *Variations II* but further in performances of the indeterminate works considered here. The types are defined by timbre or timbral effect, articulation, and temporal characteristics (e.g. speed). Other gestural types occurring in performances indicated earlier include long-tones, laser gun sounds, mice, and moans.

While demonstration of these gestural types proves difficult in this presentational format, their recurrence is an indicator of a consistent performance practice amongst performers of Cage's indeterminate works.

Two ramifications of this performance-practice approach to Cage's indeterminate works are worth mentioning. First, in approaching the music from the perspective of what performers do and in focusing directly on the sounds of recorded performances, I am positing an analytic access to the music through the sounds themselves rather than through a score as in some sense a "representation" of an ideal piece. And second, in coming to Cage's music through a definition of stylistic similarities between pieces, I am moving away from the idea that individual works of the latter half of the 20th century require a unique mode of understanding, require a unique theory.[21]

[21]Robert Morgan discusses the idea that each piece requires its own theory in "On the Analysis of Recent Music," *Critical Inquiry* 4 (1977): 33-53.